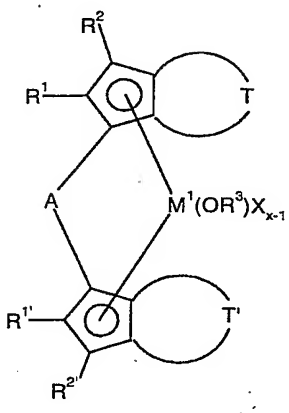
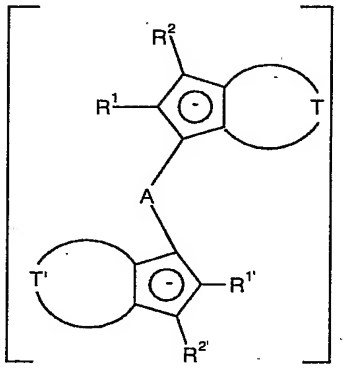
We claim:

1. A process for the meso-selective preparation of ansa-metallocene complexes of the formula (I),



(I)

which comprises reacting a ligand starting compound of the formula (II)



(II)

with a transition metal compound of the formula (III)

$$(LB)_yM^1(OR^3)X_{x+1} \qquad (III)$$

where

R^1, $R^{1'}$ are identical or different and are each hydrogen or an organic radical having from 1 to 40 carbon atoms,

R^2, $R^{2'}$ are identical or different and are each hydrogen or an organic radical having from 1 to 40 carbon atoms,

R^3 is a bulky organic radical which has at least 3 carbon atoms, is bound to the oxygen atom via a nonaromatic carbon or silicon atom and may be substituted by halogen atoms or further organic radicals having from 1 to 20 carbon atoms and may also contain heteroatoms selected from the group consisting of Si, N, P, O and S,

T, T' are identical or different and are each a divalent organic group which has from 1 to 40 carbon atoms and together with the cyclopentadienyl ring forms at least one further saturated or unsaturated, substituted or unsubstituted ring system having a ring size of from 5 to 12 atoms, where T and T' may contain the heteroatoms Si, Ge, N, P, As, Sb, O, S, Se or Te within the ring system fused to the cyclopentadienyl ring,

A is a bridge consisting of a divalent atom or a divalent group,

M^1 is an element of group 3, 4, 5 or 6 of the Periodic Table of the Elements or the lanthanides,

the radicals X are identical or different and are each an organic or inorganic radical which is able to be replaced by a cyclopentadienyl anion,

x is a natural number from 1 to 4,

M^2 is an alkali metal, an alkaline earth metal or a magnesium monohalide fragment,

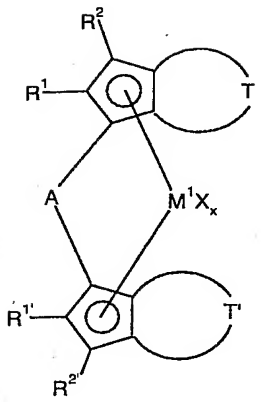
p is 1 in the case of doubly positively charged metal ions or 2 in the case of singly positively charged metal ions or metal ion fragments,

LB is an uncharged Lewis base ligand,

and

y is a natural number from 0 to 6.

2. A process as claimed in claim 1, wherein the metallocene complex of the formula (I) is converted into an ansa-metallocene complex of the formula (IV)



(IV)

where
the variables and indices have the same meanings as in the formula (I), by reaction with suitable elimination reagents in a subsequent reaction step.

3. A process as claimed in claim 1 or 2, wherein

R^1, $R^{1'}$ are identical or different and are each C_1-C_{10}-alkyl,

R^2, $R^{2'}$ are each hydrogen,

T, T' are identical or different and are each an unsubstituted 1,3-butadiene-1,4-diyl group or a 1,3-butadiene-1,4-diyl group substituted by from 1 to 4 radicals R^4, where R^4 can be identical or different and are organic radicals having from 1 to 40 carbon atoms,

A is ethylene, substituted ethylene or substituted silylene,

and the variables R^3, M^1, X, M^2 and LB and also the indices x, p and y are as defined in claim 1.

4. A process as claimed in any of claims 1 to 3, wherein

R^3 is an alkyl radical which is branched in the α position and has from 4 to 40 carbon atoms and may be substituted by halogen atoms or organic radicals having from 1 to 10 carbon atoms,

M^1 is Ti, Zr or Hf,

X is halogen,

x is 2,

LB is a cyclic or acyclic ether or diether,

and

y is 1 or 2.

5. A process as claimed in any of claims 1 to 4, wherein

M^2 is Li, Na, K, MgCl, MgBr, MgI or Mg.

6. The use of a transition metal compound of the formula (III)

$$(LB)_yM^1(OR^3)X_{x+1} \qquad (III)$$

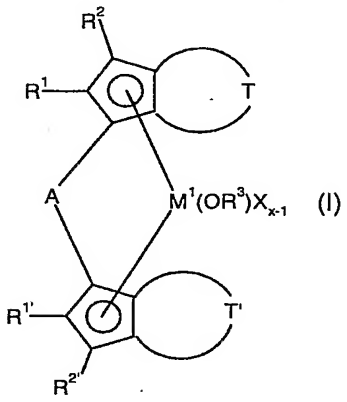
for preparing ansa-metallocene complexes.

7. A transition metal compound of the formula (III)

$$(LB)_yM^1(OR^3)X_{x+1} \qquad (III)$$

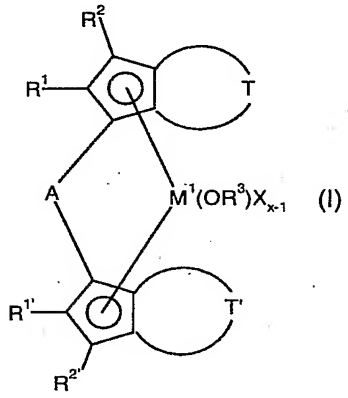
where the variables and indices are as defined in claim 1 or claim 4.

8. The use of a metallocene complex of the formula (I) as set forth in claim 1



as intermediate for preparing ansa-metallocene complexes of the formula (IV), where the variables and indices are as defined in any of claims 1, 3 and 4.

9. An ansa-metallocene complex of the formula (I) as set forth in claim 1



where the variables and indices are as defined in any of claims 1, 2 and 4.

10. The use of an ansa-metallocene complex of the formula (I) prepared by a process as claimed in claim 1 as constituent of a catalyst system for the polymerization of olefins.